I Claim:

1. A system for detecting rip tides in the vicinity of a seashore by identifying a number of telltale traits, wherein rip tides strike the shore directly and bounce back sharply as opposed to normal waves which hit the shore obliquely and dissipate their energy before bouncing back, and wherein rip tide waters have different color characteristics than normal seashore waves, and have a different surface texture than normal seashore waves; said system comprising:

a camera providing video images;

a computer analyzing said images to detect the presence of rip tides, said analysis involving image pre-filtering enhancing the telltale signs of typical rip tides, and converting said images into digital data processed for classification as NORMAL or RIP TIDE.

2. The system as in Claim 1 wherein said computer analysis utilizes an expert systems mimicking a manner in which a human observer visually performs rip tide detection, said system codifying rules used by a human; said system extracting oceanographic visual features of rip tides and determining whether an observed wave pattern is NORMAL OR RIPTIDE.

3. The system as in Claim 1 wherein said computer analysis

builds a neural network by training said system with many examples of images with known classifications of rip tides, said neural network system determining its own classification criteria, said neural network system distinguishing images of rip tides from normal wave patterns.

4. The system as in Claim 1 wherein said system and said camera are enclosed within a weather-proof enclosure.

5. The system as in Claim 4 wherein said camera includes a wide angle lens.

6. The system as in Claim 1 wherein said camera is connected via a cable to a computer.

7. The system as in Claim 4 wherein said computer is enclosed within a weatherproof enclosure with a transparent glazed display panel and a transparent waterproof flexible cover over a keyboard for inputting data to said computer.

8. The system as in Claim 7 wherein said computer accepts external cooling via direct impingement from a fan, which said fan inputs inlet air through a filter and exhausts heated air through at least one exhaust outlet.

9. The system as in Claim 1 wherein said system is powered

by an external battery module.

10. The system as in Claim 1 further comprising lockable attachment brackets attaching said computer to a life guard perch stand.

11. The system as in Claim 1 further comprising an annunciator module lighting a warning light and an audio amplifier with loudspeaker warning of the presence of a rip tide.

12. The system as in Claim 1 wherein said camera is a surveillance type video camera.

13. The system as in Claim 12 wherein said camera is a high resolution megapixel camera, having a native digital interface dispensing with the need for an external frame grabber, said camera connected directly to said computer via an interface.

14.The system as in Claim 1 wherein said computer is a laptop computer.

15. The system as in Claim 14 wherein said laptop computer has an on/off control over a visual module and provides an audio alarm to an audio amplifier.

16. The system as in Claim 2 wherein live video taped images

of rip tide wave patterns are inputted and classified, said system having predetermined visual clues enabling compilation of classification rules for detecting rip tides, including color or darkness, surface texture, wave patterns, and interactions of these characteristics, said visual characteristics entered into said defined rules; said system subjecting actual visual images to a number of pre filters to highlight each of said rip tide characteristics, each said filter defining a layer outlining spatially different characteristics; said system utilizing Fast Fourier Transform (FFT) analysis to create another layer outlining areas of enhanced surface texture, duration and sustainability of said characteristics as well as registration of spatial regions defining said characteristics of an image of a rip tide.

17. The system in Claim 16 wherein said computer utilizes a camera frame rate of about three per second.

18. The system in Claim 17 wherein said breaks in actual frame sampling are provided to permit said computer to catch up with computations of a series of consecutive frames.

19. The system as in Claim 17 wherein said rules are modified and refined over time.

20. The system as in Claim 3 wherein a plurality of live

video tape snippets are recorded and classified, including a plurality of rip tide as well as a plurality of non rip tide conditions, said system randomly assigning said snippets to a training set and a plurality of test sets, said system configuring along with pre filtering of said video imaging, said neural network being simulated using digital code, said system having a self organizing map (SOM) for identifying rip tide locations.

21. The system as in Claim 1 wherein said computer obtains frame images from said camera and feeds said frame images into pre filter software, said system utilizing a classification code using new filtered frame data and previously captured frame data to make a determination of the current conditions in the water, and ascertaining whether a riptide been detected, and if not, said system proceeding to acquire a next frame image, and if a rip tide situation has been detected, said system sounding said alarm until a manual reset is detected, and said system having a deployment trigger turning off said alarm and continuing visual surveillance of potential rip tide waters.